

ESR 480 & 580: Coastal Marine Ecology

Mondays and Wednesdays, 11:30 AM -1:20 pm
ASRC 230

Instructors:

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Office Hours:

de Rivera - SRTC, Room 238e: Mon 2-3 pm and by appointment
Granek – SRTC, Room 118d: Mon 1:30-2:30 pm and by appointment

Course Overview

Welcome to Coastal Marine Ecology! This course will introduce you to hypotheses concerning the relationships between marine species and their environment, intra and interspecific interactions, and key factors structuring marine communities. After discussing physical, biological, and anthropogenic processes that structure marine communities, we will focus on the ecology of key coastal marine communities. A combination of lectures, discussion of relevant scientific literature, and a field trip focused on the rocky intertidal community of Oregon will help you integrate knowledge of how biological and physical environments determine the distributions, abundances, processes, and diversity of coastal marine life.

Course Objectives

After taking this course, students should be able to:

- Understand ecological concepts about marine coastal habitats
- Explain key factors structuring marine communities
- Find, understand, and discuss relevant literature and incorporate scientific papers into independent learning
- Design an experiment that tests a hypothesis about a pattern or process.

Course Policies

* **Conduct:** We are to follow the ‘highest ethical standards of professional’ and student behavior. Check out the Student Code of Conduct, to which you are bound: <http://www.pdx.edu/dos/codeofconduct>

- If you have not already done so, please go through the on-line training for creating a safe, respectful campus: <https://d2l.pdx.edu/d2l/home/425907>
- Please consult the Purdue OWL regarding plagiarism and other writing issues: <https://owl.english.purdue.edu/owl/resource/589/01/>
- Practice classroom courtesy. This means:
 - Treat each other with respect (listen, don’t interrupt, don’t talk to someone during a presentation even if you’re not saying anything bad...)
 - Care about your own and each other’s learning
 - No harassment or discrimination
 - Participate: come to class, ask questions, do your work.

***Illness policy:** If you’re contagious, please don’t come to class. Work with us to figure out how to compensate for missed class and email us or upload your assignments as they’re due (if you didn’t ask for and receive an extension).

*No make-up exams!

*Prepare and deliver work on time. *Late assignments will be penalized: we will reduce your grade by 5% for each day late for the first 1-6 days; Late work 7 days or more will be given a zero* (e.g., if due on

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Monday, must be handed in before start of class the following Monday to be graded). Extension requests must be made >3 day prior to the assignment due date. If you're sick, e-mail us your assignment. If you are unable to come to class for your scheduled oral presentation, let us know at least 36 hrs in advance.

Services: If you are a student with a documented disability and are registered with the Disability Resource Center, please contact us so that we can arrange whatever academic accommodations you need. If you are a Veteran and have questions about University services or need assistance with your transition from military to campus life, please contact Chris Goodrich, Coordinator of Veterans Services at the Office of Veterans' Services, SMSU room 425.

Approximate Schedule

Date	Topic	Assignment(s) due
M 3/30	Intro; Physical marine processes and tides	
W 4/1	Larval ecology; Proposal dvpt & hypotheses	skim ch 1; Ch 6, 7, Proposal topic!
M 4/6	Rocky intertidal; experimental design	Ch 9; preliminary hypothesis
W 4/8	Soft sediment communities	Ch 10; Rocky hw
M 4/13	Estuaries	Ch 11;
W 4/15	Seagrass, kelps	Ch 12,
Su 4/19	Field trip to Boiler Bay!	Worksheet to fill out
M 4/20	Saltmarsh	(Ch 11); Article #1; soft sed hw,
W 4/22	Habitat modification	Ch 8, Article #2, Ann. Biblio
M 4/27	Catch up, review.	Field trip worksheet due; estuary hw
W 4/29	First exam (in class)	Exam
M 5/4	Primary production	Article # 3; Propl Outline
W 5/6	Coral reefs	Ch 15; Article #4
M 5/11	Mangroves	Ch 16; Article #5 & 6
W 5/13	Day off to make up for field trip time	(work on your rough drafts!)
M 5/18	Natural disturbance	Ch 4; Article #7; Proposal Rough draft
W 5/20	Marine ecology research; Student presentations	Return peer reviews
M 5/25	Memorial Day – no class	Proposal due
W 5/27	Student presentations	
M 6/1	Student presentations	
W 6/3	Student presentations; Review & Conclusions	
R 6/11	Second exam (12:30-14:20)	

- The field trip is scheduled for Sunday, April 19 (with a rain date of 5/9). The tide is low at 7:19 so we will be meeting at the Boiler Bay parking lot by 6:45AM (and shuttle from there). It's a 2.5 hr drive from campus. You are welcome to camp... at the coast the night before if you prefer (Beverly Beach State Park is nearby but fills up. If you plan to camp, arrange now!).
- Exams will cover all material discussed in class (lectures, readings, student presentation).
- You must prepare a grant proposal for a coastal marine ecology research project. Start immediately on your outline for this proposal (10/100 pts). Your rough draft will be peer reviewed (10/100 pts for reviewing); we will grade the final drafts (80/100 pts). These should be 5-7 pp 1.5 spacing for 480 proposals, 7-9 pp 1.5 spaced for 580, including References Cited section.
- Presentations (on proposals). 480: 9 min presentation + 3 min for questions; 580:12 min + 3 min questions.

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- Experimental design - 580 students only: present your own design or a design you've encountered in a paper, highlighting strengths and weaknesses and how well it allows the researcher to address the question
- Paper discussion – 580 students only. Lead/co-lead a discussion on one of the assigned papers.

Grading

Component	480	580
Participation (questions, discussions, field trip)	5%	5%
Homework (e.g., field trip worksheet, short essays, biblio)	5%	4%
Outline, grant proposal and review	28%	31%
First Exam	25%	20%
Oral presentation on proposal topic	12%	15%
Second Exam	25%	20%
Lead paper discussion	n/a	2%
Present experimental design	n/a	3%

Required Readings:

Text: Marine Community Ecology. Bertness MD, Gaines SD, & Hay ME (eds). 2001. Sinauer Associates, Inc, Sunderland, MA – **out of print so available as a reader from Clean Copy**

The required articles are listed below; their numbers correspond to the number on the class & assignment schedule on page 2 of this syllabus. These required readings are posted electronically on d2L: <http://psuonline.pdx.edu/>

You can download the papers from this site from a home computer, or from a campus computer (e.g., general access computer labs).

Either way, you'll need an ODIN account. If you don't have one, go to: <https://www.account.pdx.edu/>, call (503 725 4357), or email (help@pdx.edu) the office of information technologies help desk.

Paper

1. Alberti, J. Casariego AM, Daleo P, Fanjul E, Silliman B, Bertness M, & Iribarne, O. (2010) Abiotic stress mediates top-down and bottom-up control in a southwestern Atlantic salt marsh. *Oecologia*, 163, 181-191.
2. Altieri AH, van Wesenbeeck BK, Bertness MD, Silliman BR (2010) Facilitation cascade drives positive relationship between native biodiversity and invasion success. *Ecology* (Washington D C) 91:1269-1275
3. Duarte and Cebrian. 1996. The fate of marine autotrophic production. *Limnology and Oceanography* 41: 1758-1766.
4. Vernon et al. 2009. The coral reef crisis: the critical importance of <350 ppm CO2. *Marine Pollution Bulletin* 58: 1428-1436.
5. Gilman et al. 2008. Threats to mangroves from climate change and adaptation options: A review. *Aquatic Botany* 89: 237–250.
6. Giri et al. 2011. Status and distribution of mangrove forests of the world using earth observation satellite data. *Global ecology and biogeography* 20: 154-159.
7. Soto et al. 2011. Sea surface temperature variability in the Florida Keys and its relationship to coral cover. *Journal of Marine Biology*. doi:10.1155/2011/981723